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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,394	01/14/2004	Satoru Toguchi	A081-B	1885

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EXAMINER	
YAMNITZKY, MARIE ROSE	
ART UNIT	**PAPER NUMBER**
1774	

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/756,394	TOGUCHI ET AL.	
	Examiner	Art Unit	
	Marie R. Yamnitzky	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 41-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 41-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. This Office action is in response to applicant's amendment filed August 23, 2005, which amends the specification and claim 41, cancels claims 34-40, and adds claims 42-44.

Claims 1-6 and 41-44 are pending.

2. The rejections of claims 34-40 as set forth in the Office action mailed April 26, 2005 are rendered moot by claim cancellation.

The rejection of claim 41 under 35 U.S.C. 112, 2nd paragraph, as set forth in the April 26th action, is overcome by the August 23rd amendment.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 41 and 43 are rejected under 35 U.S.C. 102(e) as being anticipated by Shi et al. (US 6,013,383).

See the whole patent. In particular, see formulae (VI) and (VII) in column 6, see c. 6, l. 61-c. 7, l. 10 and see claims 15, 16, 23 and 24.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 4-6, 42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al. (US 6,013,383) as applied to claims 1, 3, 41 and 43 above, and for the further reasons set forth below.

With respect to claims 2 and 42, the prior art compounds represented by formulae (VI) and (VII) do not include a substituent on the aryl groups corresponding to Ar^1 and Ar^2. However, Shi teaches that the aryl groups may be substituted (e.g. see c. 5, l. 20-22). It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make compounds similar to the specific compounds disclosed by Shi with the expectation that compounds that are suggested by Shi and similar to the specific compounds would have properties similar to the specific compounds and would be suitable for use in a hole transporting and/or emitting layer of an organic EL device. One of ordinary skill in the art would have reasonably expected that substituted derivatives of formulae (VI) and (VII), having substituents as described at (d) in column 5 would be suitable for use in a hole transporting and/or emitting layer of an organic EL device.

With respect to claims 4 and 5, the prior art does not specifically limit the work function of the anode and the cathode. However, it is conventional for the cathode of an organic EL

device to have a smaller work function than the anode, and it would have been within the level of ordinary skill of a worker in the art at the time of the invention to determine suitable and optimum work functions for the electrodes based on the effect that work function has on the driving characteristics of an EL device.

With respect to claims 6 and 44, the prior art does not specifically limit the thickness of the organic layer. It would have been within the level of ordinary skill of a worker in the art at the time of the invention to determine suitable and optimum thicknesses for the organic layer. As was known in the art at the time of the invention, if the layers between the electrodes are too thin, pinholes can form in the layers and, if the layers are too thick, electrical resistance can become adversely high.

7. Claims 1-6 and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-268284.

See the entire translation (provided during prosecution of parent Application No. 09/961,230), especially the claims and paragraphs [0018]-[0021], [0051], [0052], [0061] and [0063]. (In paragraph [0063] of the translation, the symbol "μ" should appear after 10 in the penultimate line and after 0.2 in the last line.)

JP 9-268284 discloses aromatic compounds substituted with two diarylamino groups wherein one or both of the aryl groups of one or both of the diarylamino groups may include one or more substituents. The compounds may be used in any of the layers between a pair of electrodes in an organic electroluminescent device (e.g. see the claims).

While the prior art does not explicitly disclose a perylene compound of present formula C1, such compounds are clearly within the scope of the prior art. The aromatic compound that is substituted with two diarylamino groups is an aromatic compound having 6 to 20 carbon atoms, and may be a compound in which two naphthylene groups are directly bonded to each other as represented by the formula shown in paragraph [0020].

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make compounds suggested by the prior art other than the specific compounds disclosed by the prior art with the expectation that suggested compounds would have properties similar to the properties of the specific compounds disclosed by the prior art and would be equally suitable for the purposes of the prior art. One of ordinary skill in the art would have been motivated to make a variety of compounds suggested by the prior art in order to have a variety of compounds having light emitting, hole transporting and electron transporting properties that would be suitable for use in an organic electroluminescent device.

8. Applicant's arguments filed August 23, 2005 have been fully considered but they are not persuasive.

With respect to the rejections based on the patent to Shi et al., applicant argues that, in contrast to Shi's compounds, the central portion formed by the connection of the four aromatic rings in the compound of present formula C1 is not itself an aromatic ring.

The examiner respectfully disagrees. The compounds of formula C1 are substituted perylene compounds. The central ring of the perylene ring structure is inherently an aromatic

ring. The structure of the group having five fused rings as depicted in Shi's compounds and the structure of the group having five fused rings as depicted for compounds of present chemical formula C1 merely represent different ways of depicting perylene. Each of the six carbons which form the central ring portion of the compound of formula C1 is attached to three other atoms by σ bonds which result from the overlap of sp^2 orbitals. These six carbons necessarily provide the structure of an aromatic compound. For example, see the discussion on pages 969-970 of Morrison and Boyd's *Organic Chemistry*, 3rd ed. (1973) regarding the classification of naphthalene as aromatic. The analysis applied with respect to the ten carbons of naphthalene is applicable to the six carbons of the central portion in perylene. Also note the chemindustry.com information on perylene, which lists "Dibenz[de,kl]anthracene" as a synonym for perylene. As one of ordinary skill in the art would recognize from this synonym, each of the five rings of the perylene ring structure is aromatic since anthracene has three fused aromatic rings, and "dibenz" indicates two benzene rings fused to anthracene. Also see the formula for perylene as depicted in column 15 of US 5,141,671 to Bryan et al. (of record).

With respect to the rejection based on JP 9-268284, applicant argues that the prior art does not show that at least one substituent that is bonded to an aromatic group is a diarylamino group.

The examiner respectfully disagrees. As is evident from general formula [1] as shown, for example, in claim 1 of JP '284, the prior art compounds have at least two diarylamino groups bonded to an aromatic group.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
October 27, 2005

Marie R. Yamnitzky

MARIE YAMNITZKY
PRIMARY EXAMINER

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